

Abstract of the Disclosure

- A method of making a carboxylated carbohydrate is disclosed, cellulose being a preferred carbohydrate material. Carboxylated cellulose fibers can be produced whose fiber strength and degree of polymerization is not significantly sacrificed. The
- 5 method involves the use of a catalytic amount of a hindered cyclic oxammonium compounds as a primary oxidant and chlorine dioxide as a secondary oxidant in an aqueous environment. The oxammonium compounds may be formed *in situ* from their corresponding amine, hydroxylamine, or nitroxyl compounds. The oxidized cellulose may be stabilized against D.P. loss and color reversion by further treatment with an oxidant
- 10 such as sodium chlorite or a chlorine dioxide/ hydrogen peroxide mixture. Alternatively it may be treated with a reducing agent such as sodium borohydride. In the case of cellulose the method results in a high percentage of carboxyl groups located at the fiber surface. The product is especially useful as a papermaking fiber where it contributes strength and has a higher attraction for cationic additives. The product is also use-
- 15 ful as an additive to recycled fiber to increase strength. The method can be used to improve properties of either virgin or recycled fiber. It does not require high α -cellulose fiber but is suitable for regular market pulps.